

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
15 July 2004 (15.07.2004)

PCT

(10) International Publication Number
WO 2004/059468 A3

(51) International Patent Classification⁷: **G06F 9/38**

(21) International Application Number:
PCT/IB2003/005695

(22) International Filing Date: 3 December 2003 (03.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02080599.0 30 December 2002 (30.12.2002) EP

(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SRINIVASAN, Balakrishnan** [IN/NL]; c/o Prof. Holstlaan 6, NL-5656

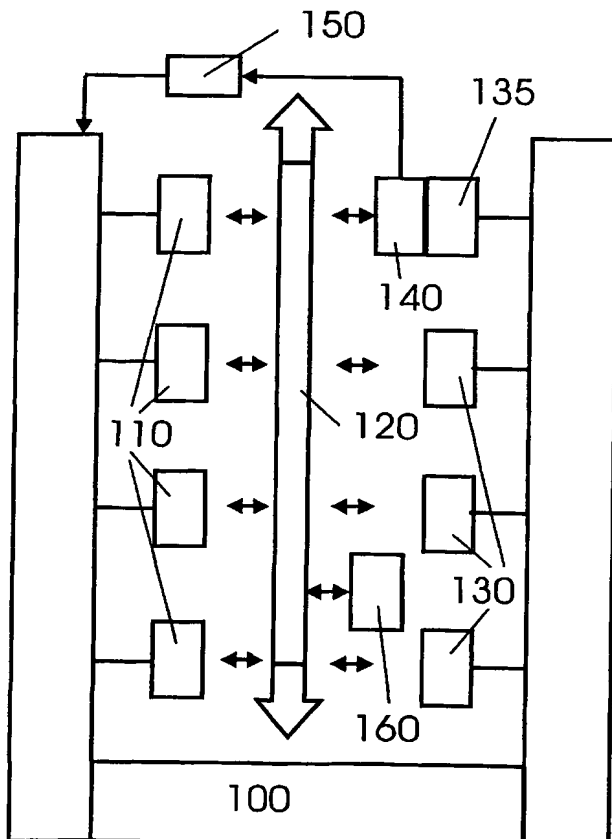
AA Eindhoven (NL). **SETHURAMAN, Ramanathan** [IN/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **ALBA PINTO, Carlos, A.** [PE/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **PETERS, Harm, J., A., M.** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **PESET LLOPIS, Rafael** [ES/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(74) Agent: **DUIJVESTIJN, Adrianus, J.**; Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: **VERY LONG INSTRUCTION WORD PROCESSOR**



(57) Abstract: The invention relates to a very long instruction word (VLIW) processor comprising a plurality of functional units (110, 130, 135), each for executing an operation, and a VLIW controller (100) connected to each of said functional units (110, 130, 135) and adapted to controlling said functional units (110, 130, 135). The VLIW processor comprises at least one indication means (140) associated with one of said functional units (135) and adapted to registering and indicating to the VLIW controller (100) whether said one functional unit (135) is idle or operating.



(84) **Designated States (regional):** ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD,

Published:

— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) **Date of publication of the international search report:**

28 October 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/05695

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F9/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 139 215 A (AGERE SYST GUARDIAN CORP) 4 October 2001 (2001-10-04)	1,9,11
Y	paragraph '0012! - paragraph '0015!	2-6,8, 12,13
Y	EP 0 560 020 A (IBM) 15 September 1993 (1993-09-15) abstract column 2, line 20 - column 3, line 3 figure 2	2-6,8, 12,13
Y	US 5 392 437 A (MATHEWS GREGORY S ET AL) 21 February 1995 (1995-02-21) column 4, line 34 - line 50 column 6, line 8 - line 39	2,12,13
A	US 5 991 884 A (LIN DERRICK CHU ET AL) 23 November 1999 (1999-11-23)	
-/-		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

4 August 2004

Date of mailing of the international search report

20/08/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Moraiti, M

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/05695

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, A	WO 03/046712 A (PESSOLANO FRANCESCO ; KONINKL PHILIPS ELECTRONICS NV (NL)) 5 June 2003 (2003-06-05) abstract -----	1, 11

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/05695

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1139215	A	04-10-2001	US 6665791 B1	16-12-2003
			CA 2337962 A1	30-09-2001
			EP 1139215 A2	04-10-2001
			JP 2001306322 A	02-11-2001
			TW 502213 B	11-09-2002
EP 0560020	A	15-09-1993	EP 0560020 A2	15-09-1993
			JP 6083578 A	25-03-1994
US 5392437	A	21-02-1995	JP 6202754 A	22-07-1994
			US 5634131 A	27-05-1997
US 5991884	A	23-11-1999	NONE	
WO 03046712	A	05-06-2003	WO 03046712 A2	05-06-2003